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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
ZHEN, LI B

ART UNIT	PAPER NUMBER
2151	

DATE MAILED: 03/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/217,389	SUCH, ONDREJ	
	Examiner	Art Unit	
	Li B. Zhen	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nce addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 21 December 1998 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "308" (p. 17, line 5) and "310" (p. 18, line 18) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: "thay" (p. 15, line 22) and "lequal" (p. 18, line 15).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1 – 3, 17, and 19 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Brown U.S. Patent No. 6,237,043.

As to claims 1, 17, and 19, Brown teaches (column 3, lines 55 – 63; column 4, lines 60 – 62; column 9, lines 10 – 40) a system, computer, and computer-readable

medium for providing a recyclable (available for use by another object, column 9, lines 40 – 45) locking mechanism that include threads, pool of locks (locking mechanisms), objects with associated variables (locking address 130, Fig. 4), and associate a lock with an object using associated variable of object as a pointer (address of locking mechanism is stored in object's header, step 214, Fig. 7).

As to claim 2, Brown teaches (column 10, lines 10 – 15) deassociate the lock from the object (object shared data be unlocked) upon a second request by thread (thread requests).

As to claim 3, Brown teaches (column 7, lines 39 – 50) an associated variable that comprises an integer (locking address 130, Fig. 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 11 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of O'Connor U.S. Patent 6,098,089.

As to claim 11, Brown teaches (column 7, lines 13 – 28, 39 – 50, and 65 – 67; column 8, lines 1 – 6; column 9, lines 20 – 28) asserting an instruction by a thread to lock an object (new thread request a lock on an object), increasing associated variable

(TakeLock is incremented) and determining whether associated variable is greater than boundary value ('H' bit equal to one). As to an associated variable that comprises a set of high bits and a set of low bits note the rejection of claim 4 above, which also meets this limitation. Brown does not teach storing both the set of high and low bits in one variable.

However, O'Connor teaches (column 13, lines 54 – 65) an associated variable (32-bit word) that can be used to store both a pointer (object reference, objectref Fig. 6A) and status variable (synchronization status 614, Fig. 6A).
It would have been obvious to apply storing a pointer and status variable together as taught by O'Connor to the invention of Brown because it would reduce memory usage.

As to claim 12, Brown teaches (column 7, lines 24 – 28) that the set of low bits (TakeLock) equal to –1 when the lock is not taken. However, Brown does not disclose the initial value of the set of low bits. Obviously when the lock is first created, it would not have been assigned to any object yet and the initial value of the set of low bits would equal to –1.

As to claim 13, Brown teaches (column 9, lines 20 – 40) determining associated variable is less than boundary value ('H' bit is equal to one). The associated variable would not point to a lock if the condition described above is true. Obviously the method would wait until condition is false ('H' bit is equal to zero) before using the variable as a pointer.

As to claim 14, Brown teaches (column 9, lines 20 – 40) determining associated variable is greater than boundary value ('H' bit is equal to 0, step 206, Fig. 7) and using the set of high bits as a pointer to a lock (step 226, Fig. 7).

7. Claims 4, 6 – 10, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown as applied to claims 1, 17 and 19 in view of O'Connor.

As to claims 4, 18, and 20, Brown teaches (column 7, lines 13 – 28, 39 – 50, and 65 – 67; column 8, lines 1 – 6) a set of high bits (locking address 130, Fig. 4) defining the pointer (a pointer or index) to a lock and a set of low bits (TakeLock 122 and 'H' bit 128, Fig. 3) defining a status variable. As to storing both the set of high and low bits in one variable, note the rejection of claim 11 above.

As to claim 6, this is a system claim that corresponds to method claim 12; note the rejection of claim 12 above, which also meets the system claim.

As to claim 7, Brown teaches (column 7, lines 24 – 28) incrementing the set of low bits (TakeLock) upon first request (new thread requests lock on an object).

As to claim 8, Brown teaches (column 7, lines 24 – 28 and lines 40 – 45) an in-use status (TakeLock greater than or equal to 0) and the set of high bits (locking address) points to a lock.

As to claims 9, Brown teaches (column 9, lines 20 – 40) a spin-status ('H' bit is equal to one) such that the set of high bits is in the process of being set to a lock (determine and store next available locking mechanism in object's header, step 208 – 214, Fig. 7).

As to claim 10, Brown teaches (column 7, lines 24 – 28) decrementing the set of low bits (TakeLock) upon second request (thread unlocks an object).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of O'Connor as applied to claim 4 further in view of Kishimoto U.S. Patent No. 5,687,073.

As to claim 5, Brown does not teach the set of high bits comprises 27 bits and the set of low bits comprises 5 bits.

However, Kishimoto teaches (column 7, lines 12 – 26) the set of high bits comprises 27 bits (higher 27 bits) and the set of low bits comprises 5 bits (lower 5 bits).

It would have been obvious to apply designating 27 bits for the set of high bits and 5 bits for the set of low bits as taught by Kishimoto to the invention of Brown because it would only require one 32-bit word to store both the set of high and low bits and reduce memory usage.

9. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of O'Connor as applied to claim 14 further in view of Lindholm U.S. Patent No. 5,797,004.

As to claims 15 and 16, Brown teaches (column 7, lines 24 – 28; column 9, lines 40 – 45) decrementing the associated variable (TakeLock) of the object and recycles lock (locking mechanism updated to indicate it is available for use by another object). Brown does not teach checking for minimum threshold and recycling the lock if associated variable less than minimum threshold.

However, Lindholm teaches (column 7, lines 63 – 67; column 8, lines 1 – 6) recycling (de-allocate and return to free list) the lock (synchronization construct) when associated variable is less than threshold (waiters list and synchronizers list are both empty).

It would have been obvious to apply recycling the lock when variable is less than threshold as taught by Lindholm to the invention of Brown because it would reduce the number of locks needed and as a result requiring less memory (column 2, lines 1 – 5 of Lindholm).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (703) 305-3406. The examiner can normally be reached on Mon - Fri, 8am - 4:30pm.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Li B. Zhen
Examiner
Art Unit 2151

ST. JOHN COURTENAY III
PRIMARY EXAMINER

lbz
March 22, 2002